ENEMY COURSE OF ACTION PREDICTION : CAN WE, SHOULD WE?

A Monograph
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ABSTRACT

Enemy Course of Action Prediction: Can We, Should We?
by MAJ Russell H. Rector, USA, 65 pages.

This monograph finds that the US Army's decision making process taught in its schools and branch courses relies too heavily on an iterative analytical method called the Deliberate Decision Making Process or DDMP. Within this process there exists a "Catch-22" in which an operations planner desires an enemy course of action (COA) prediction before developing a friendly COA. He usually receives this from an intelligence planner. Likewise, the intelligence planner desires a friendly COA from which to base a prediction of enemy intentions. Which comes first? There is no standardized method units use to answer this.

The DDMP is sequential and iterative by nature. It takes time and often bases friendly plans on a predicted enemy COA (most dangerous or most likely) rather than on merely a determination of enemy capabilities. In a time constrained environment, basing a plan on predicted enemy intentions is risky.

This monograph examines interview responses of 32 division and corps level planners. It determined that most planning is time constrained and that divisional planning is significantly more time constrained than corps level. The decision making process used at division level is a combination of analytical and recognitional decision making known as the Combat Decision Making Process or CDMP. It involves recognizing patterns of enemy action based on enemy capability not intentions. It maximizes flexibility, officer experience and is not formally taught at a majority of Army schools.

Finally, the monograph provides some insight into how the Army might streamline the CDMP coupled with a corresponding de-emphasis of enemy COA prediction. It recommends minor staff restructuring and an increased emphasis in schools to advance recognitional decision making experience.

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SECTION I INTRODUCTION

> From Plato to Nato the history of command in war consists essentially of an endless quest for certainty.[1]
>
> Martin Van Crevald, Command in War

> We should make war without leaving anything to chance, and in this especially consists the talent of a general.[2]
>
> Maurice de Saxe, Reveries, 1732

> I am aware of no initiative in the last decade which has received more attention and applause than [IPB].... [It] was a winner from the starting gate. It satisfies a warfighting need. It gives structure to the desperately complex business of the battlefield. It begins the process of making finite the overwhelming possibilities of enemy disposition, capabilities and intentions. Alas, it is too appealing.[3]
>
> COL Mark P. Hamilton
> Commander, 6 ID (L) DIVARTY

Problem Statement and Significance

The purpose of this monograph is to determine if the US Army's wargaming doctrine is correct in its consideration of enemy courses of action (COAs). The army's decision-making doctrinal process currently focuses on determining an enemy's most dangerous and/or most probable course of action during the Intelligence Preparation of the Battlefield (IPB). This monograph questions whether or not prediction of this nature is useful or potentially hazardous. It further posits that there is a more expeditious and efficient method from which to base wargaming.

The endless challenge to commanders and to those who assist them in the decision-making process involves reducing uncertainty. The period when generals were able to see and hear the clash of men and arms on the battlefield has long since passed. Battlefields have grown to such an extent spatially that the entire globe can encompass related conflicts. Conversely, time to make decisions in this huge battlespace has contracted. These two realities combine to complicate the decision-making process to an extent unmatched in history. This complexity is in part responsible for the increased reliance on predicting enemy intentions.

The nature of intelligence prediction in military operations is extremely intricate. It involves a broad range of factors to include traditional military ones such as terrain and doctrine to the more non-traditional ones of human behavior and perceptual mechanisms. The US Army defines these familiar situational factors as mission, enemy, terrain and weather, friendly troops and time available or METT-T.[4] While these traditional factors are important, the non-traditional ones are no less so and often hinder accurate prediction.

The traditional factors in enemy course of action prediction used to be relatively easy to determine. Geography did not substantially change except in the realm of urbanization. The better trained an enemy was, the more

likely he would follow his doctrine. The array of technical assets available allowed analysts to determine an enemy's order of battle and the equipment he could use with greater precision. Planners could ascertain enemy alternatives from the factors of geography, enemy doctrine, and orders of battle reasonably quickly. Even that is now changing.

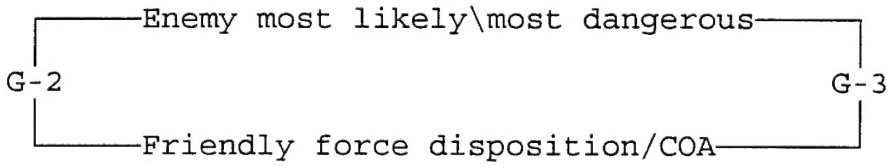
Enemy doctrine fades in clarity in this era of post-cold war armies. Archival data gives planners some insight into the nature of enemy doctrine. Some potential enemies have no discernible doctrine, or at least not doctrine that we've studied in depth. Former enemies are now potential allies and vice versa.

Operations today are far less conventional. The thin line between combat and non-combat operations are governed by potentially fluid sets of Rules of Engagement (ROE), by actions that float somewhere between United Nations Chapter VI and VII operations, and include belligerents that nimbly dance between being combatants and non-combatants (such as is seen in Bosnia-Herzogovina, Somalia and Grozny).[5] Everyone can be a potential enemy. Predicting enemy COAs in this environment becomes harder still.

There is a danger in moving beyond merely **determining** an enemy's alternatives to **predicting** an enemy's most dangerous and/or most probable COA. Predictions must rely more on the non-traditional factors of human behavior and perceptual mechanisms. These factors are far less

quantifiable and usually require more time to develop and analyze (time that planners usually do not enjoy, especially at a lower level). To be of any use, these factors must account for how the enemy perceives friendly force dispositions and intent. Often the planners responsible for predicting enemy COAs and those who develop friendly COAs find themselves at odds with one another.

The reason for this revolves around a "Catch-22" in the decision-making process. Operations planners want to know what the enemy is going to do prior to developing friendly COAs.[6] Intelligence planners know that the enemy does not plan in a vacuum. To make an effective prediction about how the enemy might act, intelligence planners need a friendly force disposition from which to base enemy actions.[7] The problem between intelligence and operations planners lies in which comes first: enemy or friendly COAs.



According to FM 101-5, Command and Control for Commanders and Staff (Final Draft, 1993), the deliberate decision-making process is sequential with enemy COA development coming first.[8]

In reality, both develop their COAs (G-2s develop enemy COAs, G-3s develop friendly COAs) simultaneously. Each planner intuitively thinks about the corresponding COA

(friendly COA when developing an enemy COA and vice versa) as he/she goes through the process. G-2s and G-3s then begin an oscillating process of balancing them back and forth until an enemy COA matches up with a friendly COA. This oscillation consumes an inordinate amount of time. It usually ends up producing but one fully developed friendly COA that matches up with one enemy COA. If planners develop additional COAs (friendly or enemy) they are frequently just skeletal in substance. Furthermore, it is a deviation from the deliberate decision-making process (DDMP) that more closely resembles the combat decision-making process (CDMP). It is taught in at least two US Army doctrinal schools as the DDMP though.[9]

Secondary Questions and Assumptions

Additional questions this monograph will answer are:

1) Has the US Army always maintained a requirement to predict enemy COAs as most dangerous/most likely?

2) What are the true differences between the three decision-making processes used by the army?

3) Does the need to predict increase or fade as time gets short?

4) Is the deliberate decision-making process better suited for different levels of planning staffs than others?

5) Is the intelligence section necessary as a separate staff entity or should the decision-making process be streamlined by incorporating it into the operations section?

6) Would this incorporation facilitate Intelligence Preparation of the Battlefield (IPB)?

7) Is IPB really a tool for the entire staff or does just a small fraction of the staff use it?

8) Does time constrained decision-making require a different type of decision-making process than deliberate decision-making?

9) Where does the US Army teach recognitional decision-making if that is the essence of time constrained decision-making?

Overview of the Monograph

Section II of the monograph (Terms and Doctrine) summarizes terms and associated doctrine relating to prediction. The section begins by defining such terms as: prediction, capabilities, alternatives, and enemy intent. It gives a brief history of the origins of the decision-making process and explores the predictive requirement within the army's current deliberate decision-making process (DDMP). The DDMP stands as the basis for the other two decision-making options: the combat decision-making model and the quick decision-making model. After clarifying the differences in the three decision-making processes the army uses to solve problems and the requirement to predict in each, it then explores recognitional decision-making and where it applies to each decision-making model. Most planners derive their predictions about enemy intent during Intelligence Preparation of the Battlefield (IPB). The section gives a brief overview of the purpose, scope and staff responsibilities for performing IPB. Section II ends with a synopsis of the requirement for prediction in doctrinal schools.

Section III leads off with a further explanation of the "Catch-22" in the deliberate decision-making process. It

then discusses how the monograph determined that the doctrinal deliberate decision-making process (the DDMP) had been transformed in units.

The monograph used a simple interview technique to determine:

1) Is the DDMP understood and really followed?

2) Does the requirement to predict exist at division and corps level?

3) How much of the decision-making truly is deliberate and how much is time constrained?

4) Who does the predicting if it is required at all?

Division and corps intelligence and operations planners provided the information to answer these questions. The section summarizes responses and trends in the answers to the questions. The section concludes with a comparison of these responses and observations of the method French and Chilean equivalents use to conduct DDMP in relation to prediction.

Section IV answers the additional questions put forth earlier in this section. It summarizes the sections and offers that the requirement to predict enemy COAs is unnecessary during time constrained planning. It concludes that most decision-making is time constrained. Furthermore, prediction in a time constrained atmosphere actually takes time away from such activities as rehearsals and spreads the wargaming process over three of the four DDMP steps. Planners save time in the decision-making process when each

staff section conducts IPB jointly with a concept of a friendly COA at the outset. To do this, a member of the group that conducts IPB must possess recognitional decision-making skills.

The commander is the most qualified person to perform recognitional decision-making and, therefore, absolutely necessary during the IPB process as they are. They accrue that qualification through both experience and training conducted at the Pre Command Course at Fort Leavenworth, Kansas.[10] Schools that teach the deliberate decision-making process do not effectively teach recognitional decision-making.[11]

The section concludes by offering that prediction and deliberate decision-making is usually not necessary at division level and below. Commanders and planners make a vast majority of their decisions in a time constrained environment.[12] At corps level it can be useful for the added time corps are afforded. Even still, corps spend more time conducting time constrained decision-making.

Another conclusion regards changing structure (to physically integrate the intelligence and operations sections) or procedure (change doctrine and training to facilitate jointly developed IPB). Finally, the monograph closes with a recommendation to include a greater degree of recognitional decision-making processes in training coupled with an increased application of iterative computer simulations and wargames against thinking enemies.

SECTION II

TERMS, DECISION-MAKING and the PREDICTIVE REQUIREMENT

> There is required for the composition of a great commander not only massive common sense and reasoning power, not only imagination, but also an element of legerdemain, an original and sinister touch, which leaves the enemy puzzled as well as beaten.
>
> Sir Winston Churchill, 1923.[13]

> It can be mathematically shown that, even in the case of an organization with as few as 300 variables, it will take six billion years for a computer weighing as much as the earth, every atom of which carries a 'bit' of information, to work out all possible combinations. It is suggested, however, that working out which of these combinations "makes sense" may take even longer[14]
>
> S. Beer, 1972

This section describes the theoretical foundation upon which the Army bases its DDMP. At every turn, a thinking enemy will attempt to outguess, to outpredict his opponent. The art of deception lies in doing the unpredictable. What is prediction anyway?

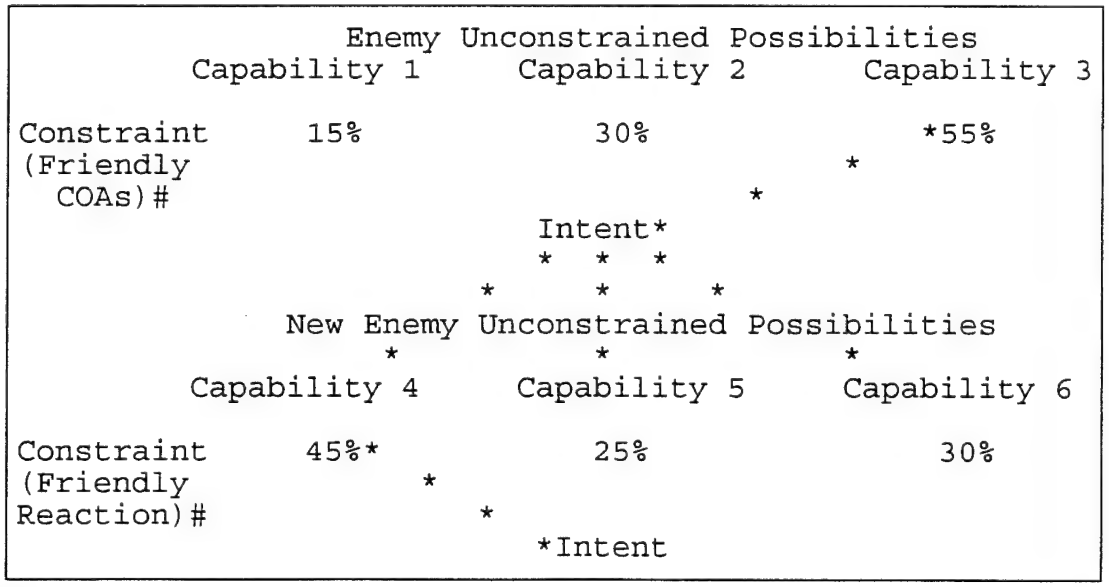
TERMS

The Army has for many years made clear distinctions between the terms *capabilities*, and *intent*. It has frequently debated the merits of basing predictions on one or the other.

The term *capability* involves possibilities or "...endued with physical power sufficient for an act."[15] Capability should be considered in a non-constrained atmosphere. Non-constrained in this case equates to not imposing friendly actions on an enemy. Where planners begin

to misconstrue the term comes when they place the term *capabilities* within the context of a constrained environment. Placing the term capability in a constrained environment (such as friendly force courses of action) requires a measure of prediction in itself.

The term *intent* or *intention* means "...the fixed direction of the mind to a particular object,...the state of being strained."[16] Enemy intent (though we tend to shy away from calling it such) is derived by assigning relative probabilities to a list of capabilities.[17] In logic, the term *intention* denotes a starting point based on a general conception. This is a generalization based on an unconstrained environment that leads to another iterative level based on a further assessment of capability at a certain time and place. As the logical process continues, newer levels of intention are derived based on capabilities within an increasingly constrained environment.



#Note: Percentages are hypothetical & derived from wargames.

When the environment can no longer be further constrained, prediction can be accommodated with certainty.[18] An important point to consider here is that determining an enemy's intent is essentially a wargame. Like Clausewitz's absolute war, we'll never get to certainty in prediction.

The term to *predict* or *prediction* means "...to foretell, prognosticate...to make known beforehand."[19] Given the aforementioned definitions, prediction should occur based on intent where capabilities are placed within a constrained environment. By the very fact that deriving intent is a wargame in a fashion, it is logical to conclude that to predict intent prior to the wargaming portion of the decision-making cycle is flawed. For that matter, it is not possible to predict before knowing what the constraining variables are. The requirement to predict depends on the type of decision-making and problem solving model commanders and staffs use.

The Problem Solving and Decision-Making Models

The genesis of problem solving theory began during the 17th Century with the work of Rene Descartes, Francis Bacon, Robert Hooke, Sir Isaac Newton and others.[20] These men used a sequential step by step procedure to conduct structured analysis of scientific problems. Descartes first postulated the four step method to isolate scientific observations. Quantifying observations for Descartes and other scientists of the era provided them the means to

communicate to the academic community in a logical effective manner.[21]

Their problem solving methodology focused on gathering facts and identifying their problem, developing possible solutions, comparing them and finally selecting the best alternative. This traditional problem solving model forms the basis of the three military decision-making models the army uses today; the deliberate decision-making process, the combat decision-making process and the quick decision-making process.[22]

The 19th and 20th century saw philosophers and psychologists conducting research into human thought and the mental processes linked to problem solving. Dr. William James conducted some of the first experiments in psychology at Harvard in 1875.[23] John Dewey was another who analyzed human thought processes in an attempt to explain how humans formed ideas and solved problems.[24] Both men were leaders in the 'pragmatist movement' and their writings were extremely influential in the developing field of psychology. As a result, problem solving and decision-making are major fields of study within the discipline of psychology.[25]

Almost all problem solving and decision-making models are based on the Dewey theory proposed in 1910. The three steps of his model are:

Define the Problem--

Determine Alternatives--

Select the best[26]

An example of Dewey's theory that continued was Herbert A. Simon's model of:

Intelligence--Design--Choice[27]

In Simon's model intelligence refers to gathering information (capability of the variables) and defining the problem. Since the problem might not be fully defined until later, a concept of the problem was sufficient to move to the next stage. Design means developing workable solutions (determining intention based on the interaction of variables). Choice pertains to selecting the best solution to solve the root problem. Ironically, predicting how variables will interact does not occur in the initial stage, but in the developing solutions stage. This model is essentially sequential by nature.

Another version of the Dewey model can be found in the model proposed by Arthur VanGrundy. It too consists of three stages:

Problem analysis and definition--

Idea generation--

Idea evaluation and selection[28]

The stages in the VanGrundy model mirror those in the Simon model. The differences in the two models are subtle, however. They lay in how deeply the problem is defined. To define the problem fully, prediction is necessary earlier in the process in the VanGrundy model than in the Simon Model. To predict how variables will interact, the problem solver must oscillate back and forth between idea generation and

problem analysis to fully define his problem. In this case wargaming would be integral to problem definition and occur earlier than we conduct it now. This model is characterized more by simultaneity than the Simon model. As this monograph will show later, the Army's DDMP displays characteristics of both models. The Army's DDMP resembles the Simon model (sequential) in the way it teaches decision-making in the Combined Arms Service Staff School (CAS3), the Command and General Staff College (CGSC) and the first half of the curriculum of the School of Advanced Military Studies (SAMS). The DDMP approaches the VanGrundy model (simultaneity) in the latter stages of SAMS and that used in a majority of the units interviewed.

The VanGrundy model most closely resembles the traditional problem solving methodology. Some other more complex models expand the individual steps. The US Army's deliberate decision-making process is one of those models.

A potential pitfall can occur as problem solvers expand and complicate individual steps. If the process is sequential there should be no adverse effects on the overall solution except that it will take more time getting there. If the process is simultaneous, every step that expands causes a corresponding enlargement on other steps with which it must interact. Not only will there be an increase in time to conduct a step, but that increased time is passed on to any other step simultaneously intertwined with it. We

have done just this with the IPB (and prediction) process as will be displayed later.

FM 101-5, Command and Control for Commanders and Staff, discusses the basic problem solving methodology consisting of six primary steps. These steps are:

1) Recognize and define the problem

2) Gather pertinent facts and make assumptions to determine the scope of the problem **and the solution to the problem**

3) Develop possible solutions

4) Analyze each solution (wargaming)

5) Compare the outcome of each solution

6) Select the best solution available[29]

This six step process forms the basis for the deliberate decision-making process the army uses today.

An interesting point arises concerning prediction in this model and where it occurs. Step 2 above alludes to predicting how an enemy will use his capabilities and makes an assumption that a solution is possible. Planners then define that solution. Furthermore, to come to a solution, planners must develop it. In the model above this does not formally occur until step three. An explanation for this is that part of the process is simultaneous and not sequential. Also, planners must apply an element of recognitional decision-making. Wargaming or predicting how capabilities will interact (determining intention) occurs again during step 4. Step 3 onward is sequential, serves to corroborate

what planners already determined in steps 1 and 2, and assumes that more than one solution to a problem exists. The interplay between sequentiality and simultaneity within the problem solving process plays itself out interestingly within the army's three decision-making processes.

The army has long used a structured approach to solving combat problems. Generals from Grant and Sherman to Eisenhower and MacArthur used some form of analytical process[30] The modern form for military decision-making traces its origins to the post World War I "Commander's Estimate of the Situation."[31] The following lists the steps of the 1930 version:

1) Mission
2) Opposing Forces
    a) Enemy forces (now)
    b) Own forces (now)
    c) Relative combat strengths (now)
3) Enemy Situation
    a) Plans open to the enemy
    b) Analysis of enemy's plans (prediction)
    c) Enemy's probable intentions (prediction)
4) Own Situation
    a) Plans open to you
    b) Analysis of plans open to you (based on prediction
5) Decision

In his study Mission Analysis in OOTW, MAJ Derek A. Miller found that this version of the estimate of the situation evolved into the army's current deliberate decision-making process[32] Although the army altered and refined some of the finer details, the process has not significantly changed since the interwar years. The current deliberate decision-making process (DDMP)) consists of the following four steps:

1) Mission Analysis

2) Course of Action Development

3) Course of Action Analysis

4) Decision

On cursory examination, the DDMP provides a logical sequence for finding solutions to combat problems. It becomes less sequential under an examination of the requirement to predict enemy intentions, where that requirement falls in the process, what capabilities (variables) are considered and how they become constrained. The DDMP begins to lose its value for an inexperienced user. It requires great repetition, intense deliberation and is usually too cumbersome for the time allotted. Each of these pitfalls traces its cause back to the requirement to predict.

During the first step (mission analysis), the staff analyzes the assigned mission to determine the higher commander's intent both one and two levels up. It is during this step that IPB begins and by doctrine is to continue throughout the DDMP. According to FM 34-100, Intelligence Preparation of the Battlefield (1994), every staff member

participates in IPB. One of the products that IPB provides during mission analysis is threat COAs "...to provide the basis for formulating friendly COAs and complete the intelligence estimate."[33] Intelligence planners usually develop and present threat COAs. If these planners develop threat COAs beyond threat capabilities in an unconstrained environment, they must conduct some sort of wargame to determine how friendly and threat COAs match up before making their prediction. To do so they must possess a concept of a friendly COA.

In the second step (course of action development), the staff formally develops friendly COAs based on the facts and assumptions identified during IPB and mission analysis. The purpose of the step is to provide feasible, acceptable and suitable courses of action that fulfill the mission and commanders intent two levels up.[34] To determine whether or not a friendly COA is feasible or not, planners conduct another informal wargame. This mental process is only effective based on the experience and recognitional decision-making ability of those performing it. This monograph will discuss recognitional decision-making later.

The third step (course of action analysis) focuses on wargaming each potential friendly COA against each threat COA determining branches and sequels as a result of the process. Through the wargaming process, the friendly COA transforms to a synchronized product. By a process of action-reaction-counteraction a visualization of the battle

forms for the staff. FM 101-5 cautions that the wargame is **not** a prediction but in reality, this usually becomes a prediction and one that leaves the army open to enemy surprise and deception.[35] The last phase of COA analysis is to compare friendly COAs to determine the "best possible friendly COA against the enemy COA of most concern to the commander."[36] In reality, the COA of most concern to the commander is the threat COA the intelligence planner predicted would be the most dangerous back in the mission analysis step.

The final step in the deliberate decision-making process is the decision itself. After analyzing and comparing COAs the staff outlines each, highlighting its advantages and disadvantages. The staff then briefs the commander, and he selects the COA he believes to be the most advantageous. He then specifies command and support relationship considerations in the OPORD or OPLAN. The staff's briefing must not prejudice the commander.[37] Unfortunately, the process is filled with predictive requirements that can create an environment for prejudice to both the commander and his staff.

Differences Between DDMP, CDMP, and QDMP

The DDMP discussed above is primarily a sequential set of actions with discrete points in the process where decisions are made or additional guidance is given. It provides the starting point for all tactical decision-making occurring while conducting operations. It provides the

basic "set" of the unit's operations from which commanders can make alterations in minimum time with minimum task-organization changes and major unit relocations.[38] Time is relatively unconstrained and provides the opportunity to analyze in detail a number of both friendly and enemy COAs in order to arrive at the best flexible solution. Units primarily use the DDMP best before operations begin. FM 101-5 cautions that in using the DDMP commanders and staff must stay within the time required to complete the process for both current and future operations. Furthermore, it must stay within the cycle of decide, detect and deliver for fires execution.[39] This implies that when time is short, the DDMP may be incompatible with the mission assigned.

The Combat Decision-Making Model (CDMP) is a basic extension of the DDMP. It occurs best after thorough and detailed preparation for an OPLAN.[40] The key difference between the DDMP and its two successors is time. The staff remains fully involved but, will probably receive more specific guidance from the commander. Combat often forces commanders to make decisions without the benefit of a time intensive, deliberate analysis.[41] In combat results are more important than process. In time critical situations the commander and staff may have to proceed through the decision-making process and issue orders based on their own knowledge of the situation without taking the time to formally conduct the DDMP.[42]

Both the DDMP and the CDMP represent the coherent, mental activities that support sound decision-making. They both include the logical identification of the mission, development of concepts for executing the mission, evaluation of the concepts, and communication of the decision in a clear, concise manner.[43] From here the two processes begin to deviate.

The CDMP is primarily a parallel and simultaneous thought process where the assessment of the outcome of the current operation and achieving an overall successful end state occur concurrently. The oscillation of action\reaction between friendly and enemy COAs constantly occurs throughout CDMP. The commander personally drives the CDMP through to execution. As time is short, his expertise and experience is critical as he continuously conducts his personal assessment, formulates concepts and makes decisions, using his staff to support his efforts.[44]

The concept in the CDMP typically includes only one enemy and one friendly COA. This limits and streamlines the process so the commander can make an acceptable decision in the short time available. Although not restricted to a single COA, the commanders continuous involvement in the CDMP supports the development of one friendly and enemy COA to be analyzed with branch and/or sequel option development to the one COA standard practice.[45]

A thorough set of DDMP products is absolutely essential for the CDMP to work as described above for two reasons.

First, the products (such as weather analysis, terrain analysis, orders of battle and general situation analysis) generally do not change. Second, if the DDMP has properly identified branches and sequels to the operation, commanders and staffs can more easily effect adjustments during the CDMP as known reference points (identified in the DST and event templates) were already predetermined in the DDMP.[46]

The doctrine for and practice of the CDMP go astray when time is short and there has been no DDMP in preparation for the CDMP. An experienced staff possessed of keen recognitional ability, acutely aware of their commander's intent and allowed the latitude to display initiative based on trust can still execute decision-making, but it will not be doctrinally the DDMP or CDMP. Inexperienced staffs will attempt to go through the DDMP or CDMP quickly only to find themselves bogged down with prediction and wargaming. The solution for the commander in this situation is to proceed to the third decision-making process: the quick decision-making process (QDMP).

The QDMP is simply the troop leading procedures all officers learned as lieutenants and refined along the way:

Receiving the mission
Issue the warning order
Make a tentative plan
Starting movement
Conducting reconnaissance
Completing the plan
Issuing the order
Supervising and refining the plan

This decision-making process is dictated by the lack of a

staff or an ineffective one, or when time is so short that an immediate decision is necessary.[47]

The DDMP is an analytical decision-making strategy. The QDMP on the other end of the spectrum is purely recognitional by nature. The CDMP is a collision of analytical and recognitional decision-making strategies. It is here that art and science mix within a staff. The army spends a great deal time and effort developing the analytical abilities (the science) in its officers. Developing recognitional abilities (the art) is more difficult yet it lies at the very heart of predicting enemy intentions.

Recognitional Decision-making

The commander is responsible for making combat decisions and for the results of his decisions. He cannot delegate his responsibility to his staff or to his subordinate commanders. Staffs help commanders make and communicate those decisions. How we teach generations of soldiers to make combat decisions is crucial to how we fight wars.

Military decision-making as mentioned above is both science and art. Many aspects of combat operations (movement rates, fuel consumption, weapons effects and port capacity, etc) are quantifiable. These aspects are the "science of war." There are other elements, however, that are not quantifiable. War is a human experience and cannot be totally regulated by mathematics (as the scientists of

the 17th century did with their experiments). In these cases the intangible qualities of leadership, personal experience and the commander's will become important.[48]

The analytical decision that lies at the core of the DDMP is a technique for making decisions based upon the review and comparison of available information. The best decision derives from a comparison of the essential battlefield factors. This technique emphasizes the evaluation of sets of options.[49]

Proponents of the analytical strategy believe that more efficient methods of analysis will display the superiority of the analytical method over all others. If commanders and staffs were more efficient at accomplishing analytical decision making, they could find the best solution to any tactical problem every time.[50] Analytical decision making, however, relies on a high degree of certainty about the critical elements of combat; METT-T and other factors. This degree of certainty is often missing in combat. This creates a serious credibility problem when we present doctrine about **one right way** to make decisions (the analytical strategy) and then place commanders and staffs in situations where they must ignore doctrine in order to make the vast majority of time-pressured decisions during training exercises.[51]

This suggests that commanders and staffs must possess a flexible set of decision making strategies that can meet the demands of planning. When there is plenty of time,

commanders and staffs can use the deliberate approach. During time critical situations they may have to abbreviate this process and rely on their own judgment. Enter the realm of recognitional decision making. Dr. Gary Klein and associates in their 1987 study, A Knowledge Elicitation Study of Military Planners, explains this decision as the choice between analytical and recognitional decision making strategies.[52]

Recognitional decision making is a technique for making decisions based upon the intuitive knowledge or experience of the decision maker. This technique emphasizes the quick mental jumps at a solution to a problem and the wargaming of this solution. Recognitional decisions occur when a commander (or members of his staff) identifies a situation as typical, discerns the typical reaction to the situation, evaluates the reaction for feasibility, and then either implements it, improves it, or rejects it for another reaction.[53]

Recognitional decision making focuses on the commander's (and staff's) ability to recognize tactical patterns, decide the correct counterpattern, and rapidly apply a solution to accomplish the mission. Combat arms officers learn this method quickly and practice it daily in the jobs of platoon leader through the time when they become company commanders. They have no staff and rarely the time to produce a completely analytical solution.

Commanders and staffs conduct this kind of decision making all the time. Recognitional decision making, however, is not clearly explained in doctrine and is often viewed by the uninformed as unprofessional "seat-of-the-pants" decision making. A cursory study of military history would hardly agree with that judgment.

Dr Jared T. Freeman and Dr. Marvin S Cohen in their 1993 study, Training Metacognitive Skills for Situation Assessment, found that the analytical approach produces errors or biases at every stage of the process. The reasons for this they found are attributable to an inconsistency in defining formal constraints and identifying all the critical variables that act on potential solutions to a military problem.[54] They also found that analytical methods do not reflect the way actual expert decision makers handle problems, particularly in complex situations requiring rapid situational assessment and planning.[55]

In Freeman and Cohen's eyes, the recognitional viewpoint equates successful assessment with a virtually automatic (rather than controlled) response to environmental patterns. It encompasses the "sensitive detection of stimuli near the threshold of awareness, and the use of easily retrieved, task-specific encodings in skilled memory."[56] They believe that military officers attain different levels of recognitional decision making ability based on their experiences and education. There are two methods to approximate the levels of recognitional ability

an officer reaches: wartime experience and simulations against an enemy with superior recognitional decision making abilities.

Interviews conducted with COL Gregory Fontenot (Director, Advanced Military Studies Program) and LTC Russell Glenn (Seminar Leader, School of Advanced Military Studies) corroborate the findings of Freeman and Cohen. They both indicate that recognitional decision making ability must be part of a staff officer's repertoire. LTC Glenn elaborated that recognitional abilities could be taught (whether talent was evident or not), but that officers had to know the analytical process as a foundation from which to teach recognitional decision making.[57]

COL Fontenot expressed three elements that were necessary for recognitional decision making ability: talent, technical expertise and experience. Training the analytical process (DDMP) served to bring out any latent talent (talent had to exist for it to be brought out; if not then any recognitional ability would be suspect). He felt that talent was essential for an officer to know when to break away from the analytical technique and trust his recognitional abilities.[58] COL Fontenot expressed that we (US Army) get too wrapped up in process (DDMP) and lose focus at times. He believed that before a person can think outside the process though (or any doctrine for that matter), he must first understand the process.

As Director of SAMS and the AMSP, he witnessed students take what had been taught at the CGSC, perfect it during the first half of SAMS and only then display some effective recognitional decision making ability. The germination of a modicum of this recognitional decision making ability took eighteen months. When asked if the educational process could be streamlined, he responded that additional exercises would help. The essential ingredient was to continue the iterations of the DDMP first. Once the students gained DDMP expertise then additional variables would be input requiring them to ingest new patterns. The whole repetitive process of exercises in itself continued the recognitional education in that students were constantly exposed to normal patterns. Once these normal patterns were internalized, then students could experiment with abnormal patterns to see where they would lead.[59] Exercise directors developed these abnormal patterns based on how well students had executed responses to normal patterns first.

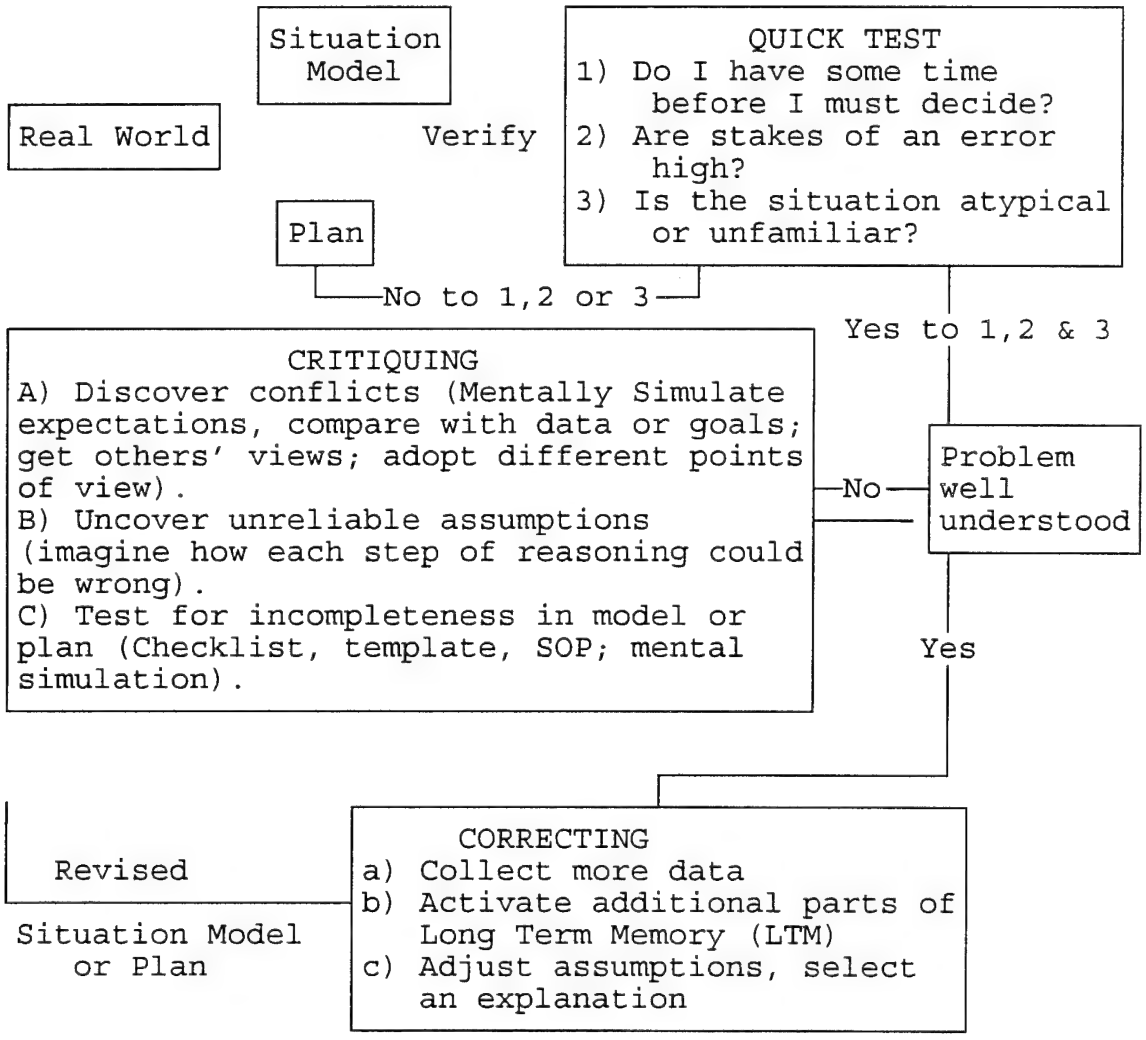
The result of this education illuminated the beauty of the "suboptimal COA." To do the unlikely had great merit during the SAMS Battle Command Training Program (BCTP) rotation of 8-17 March 1995. This had even greater merit when the opponent was the World Class OPFOR, who in dealing with US forces followed the cliche "trust in Blue." (BLUEFOR would always follow their own most dangerous COA against the OPFOR; they were predictable) Determining the

suboptimal COA became possible when students thought outside the DDMP. In other words, the students tended toward the recognitional decision making strategy from the analytical one. It could not have been accomplished without the DDMP as a basis though.[60]

An interesting point about the educational journey from the DDMP through to recognitional decision making concerns the importance of predicting enemy COAs as most likely or most dangerous. If US officers can make the jump from the DDMP to recognitional decision making to come to the conclusion that the suboptimal friendly COA can be the best, it is not too great a leap of logic to assume that a future enemy could do the same thing. In that case, is it still necessary to force intelligence planners to determine most dangerous/most likely enemy COAs?

Beginning with Chase and Simon's (1973) work on chess, expertise has been equated with mastery of a large collection of familiar patterns and their associated responses. However, pattern recognition says little about decision making in novel problems. Freeman and Cohen's study focused in on a third problem solving methodology that includes elements of both analytical and recognitional decision making known as the "adaptive model."[61] This model most closely resembles the CDMP in reality when a partial or incomplete DDMP precedes it. Their study of 33 LTCs and Majors found that in these circumstances, these

officers used methods that combined pattern recognition with strategies for effectively facilitating recognition, verifying its results, and constructing adequate models when recognition fails.[62] The following is the meta-cognitive knowledge and process flow and is the essence of the adaptive decision making model:



It is here that the US Army finds itself when it makes decisions in the CDMP and is especially useful when it must do so without the benefit of having previously conducted the DDMP. Although it is addressed later in

Section III, it is important to note here that the product of the requirement to identify the enemy's most dangerous/most likely COA is attacked most often in all three steps of the 'critiquing' stage above. This has historically been a stumbling block in decision making processes and has been a part of IPB for a long time.

History of the Predictive Requirement and IPB

World War I witnessed an immense growth in both the size and complexity of the battlefield. With these increases came the impossibility for the commander to personally deal with all data coming into his headquarters. Although this trend existed long before World War I, it wasn't until then that authors took to task the role of intelligence on the modern battlefield. Most of these were written by former intelligence officers who were primarily concerned with the collection and reporting of information.[63] Their secondary concerns revolved around whether one should report mere facts or draw conclusions about enemy intentions and whether or not prediction was either desirable or feasible.

In 1924, LTC Walter C. Sweeney made a sharp distinction between what he called the "evaluative function" of intelligence and the drawing of conclusions from it.[64] The former was an intelligence function and had to do with turning raw data into a comprehensive picture of the current enemy situation. Conclusions, which would enable one to determine the enemy's probable plans and intentions were

strictly a General Staff function. These are not intelligence, but are deductions made from a study of intelligence for use by the commander. Conclusions based on intelligence could only be accomplished through a thorough familiarity with both friendly and enemy forces, methods of combat, general plans and psychology.[65]

In 1936, COL Edwin Schwien while an instructor at the Command and General Staff College declared that it was impossible to positively identify the enemy's intentions, and even if it were possible, the fog of war made the carrying out of those intentions extremely tenuous.[66] He expressed particular contempt for such phrases as "probable enemy intentions" and most probable enemy action."[67] Instead of prediction, he taught that the G-2 was to present the commander with a list of enemy capabilities, eliminating only those courses of action which were physically impossible or which would have no effect on the friendly course of action.[68]

These ideas did not fall on deaf ears. In 1942, the Naval War College handbook on military decision making emphasized that the commander is properly not interested in what the enemy intends to do, but rather in everything that the enemy can do.[69]

After World War II, the Command and General Staff College continued to reject the value of identifying enemy intentions. LTC Robert Glass and LTC Phillip Davidson as instructors at CGSC in 1948 focused on enemy capabilities

and defined them as "those COAs which the enemy can physically perform and which will interfere with or favor the accomplishment of our mission."[70]

Over the same period, the Army's official guidance on predictive intelligence evolved from requiring the G-2 to outline probable enemy COAs and intentions (1928 and 1932 versions of FM 101-5) to later versions (1940) that modified the G-2s function to one of keeping the commander informed regarding the enemy's situation and capabilities.[71]In the 1940 version, the G-2 was permitted to express "the relative probability of adoption of enemy lines of action only if exceptionally reliable information were available.[72] 1950 and 1954 versions did not deviate from keeping away from the predictive requirement.

From 1960 through the 1968, 1972 and 1984 versions of FM 101-5, the requirement to predict enemy intentions reappeared. These manuals charged the G-2s with the responsibility of "estimating enemy capabilities and vulnerabilities, including the COAs the enemy is most likely to adopt."[73] The 1984 manual required the G-2 to list two or three enemy COAs in order of probability of adoption. Interestingly, these COAs were to be selected from a range of all those which the enemy is capable of conducting, combined with judgment. Each manual lends a variety of advice concerning when to point out the enemy's most dangerous COA, however, this was never a requirement as was the requirement to predict the enemy's most likely COA.

The 1993 version of FM 101-5 does not use the same language to **require** G-2s to predict enemy intentions. It does **recommend** that the G-2 make "conclusions and recommendations as appropriate...these might concern...the COAs open to the enemy and the probable order of their adoption."[74] The manual later describes the DDMP as providing sufficient time for the staff to explore the full range of probable and likely enemy COAs. It leaves the predictive requirement up to the commander to impose yet clearly states that he is the best prepared to make the prediction himself based on experience and expertise.

FM 34-130 on the other hand still maintains a requirement for intelligence officers to predict the enemy's most likely and most dangerous COAs.[75] The 1994 version does not include as many references to the predictive requirement as the 1990 version, however. It is evident that historically the predictive requirement has undergone a roller coaster cycle. The US Army is currently at a transition stage and is beginning to soften the requirement for G-2s to predict enemy intentions.

CGSOC and SAMS and the Requirement for Prediction

Changes take time to incorporate in a body as large as the US Army. FM 101-5 (1993) now only recommends that intelligence planners identify enemy intentions. FM 34-130 (1994) written after the current FM 101-5 still requires prediction. The test for which method of expressing the

enemy situation to the commander the army uses remains in an examination of the doctrinal classroom and in an exploration of the methods used in units in the field..

The focus of CGSC is on teaching the DDMP. Instructors require the students playing the part of the G-2 to predict the enemy's most dangerous and most likely COAs.[76]This requirement is satisfactory when the student selected as the G-2 for a particular exercise has had recent maneuver experience. Even then the predictions are often found to be highly inaccurate when the group reaches the wargaming stage. When the student selected has no experience in doing what he is predicting the enemy will do, the prediction only serves to disrupt the entire DDMP. Rarely does a tactics instructor require anyone other than the G-2 to make the prediction into enemy intentions.

Out of habit, students began SAMS predicting and briefing enemy most likely and most dangerous COAs. During the SAMS BCTP rotation (8-17 March 1995), General (Ret) Richard L. Cavassos while serving as the senior observer commented that, "...the only reason to brief enemy COAs is to just show (us) what they're capable of and surely not what they're likely to do."[77] COL Beldon, Chief of Ops Group B took the predictive requirement to task as well. "Often we base the enemy's most likely and most dangerous COAs only on what the G-2 finds out. This is flawed. There is (greater expertise) available and that reconnaissance is more than just the G-2s job."[78] MG Ernst, while sitting in

during the same rotation, expressed the notion that enemy intent could not be determined without first having a concept of our own operations. "Start the process for determining enemy intent with ourselves; we know more about us than them usually."[79]

The requirement to predict enemy intentions surely exists in CGSC and carried over into the first half of SAMS. The latter stages of SAMS saw the predictive requirement put into perspective. Judgment and a measure of recognitional decision making ability keeps it in perspective. When the enemy is capable of conducting a suboptimal COA coupled with US forces always placing greater and greater attention on his most likely/most dangerous COAs, the whole idea of prediction can be the unbalancing factor that can lead to disaster. Unit planners recognize and address this possibility.

SECTION III

DOCTRINAL DEFICIENCY or UNIT EXPEDIENCY?

The "Catch-22" of the DDMP is that the army requires intelligence planners to predict enemy intentions without first having friendly force dispositions with which to base it. The DDMP calls for operations planners to develop friendly COAs with the enemy's intentions taken into account. So, which comes first, enemy intentions or friendly COAs?

To understand how units are addressing this dilemma, I conducted a series of interviews with 22 division level intelligence and operations planners and with 8 officers at corps level planners.[80] The purpose of the interviews was fourfold:

1) To determine which decision making process is being used in units,

2) To determine if a prediction requirement exists,

3) To determine in gross terms how much decision making is time constrained, and

4) To determine who does the prediction.

Each division and corps had representation in the study. In five cases officers had recently changed over or were not available for comment. In each of these instances, officers questioned from the same unit were able to offer sufficient insight to cover the missing officers area of expertise.

A complete listing of officers questioned by unit and duty position are at Appendix A. The questions asked are at Appendix B and a complete listing of their answers including the means to read the table are included in Appendix C.

Divisions primarily require their staffs to perform the DDMP, however, 6 of 22 staff officers initially responded that they really use the CDMP. All corps staff officers replied they use the DDMP. At the conclusion of the interviews many changed their answers as a result of closer examination into the processes they follow. The separation between divisions and corps was more evident then. 17 of 22

division staff officers said they really followed the CDMP. 4 of 6 corps staff officers said they still performed the DDMP though. The reason for this difference is related to the environment in which they make decisions. The average response to what percentage of decision making was time constrained for divisions was 84%. For corps it was lower at 61%.

The requirement to predict enemy most likely/most dangerous COAs exists both at division and corps levels, although some differences are again apparent. 4 of 12 divisions do **not** require prediction of enemy intentions. All corps do. Interestingly, staff officers from each of the divisions that do not require enemy intention prediction said they perform CDMP at the outset of questioning. In another division, the commander or chief of staff conducts the enemy prediction and not the staff. Of those divisions that do predict, the requirement falls on the G-2. In the remaining divisions prediction is a collective responsibility shared among the entire staff and done in both mission analysis and COA development.

Prediction is required in all four corps. One requires the G-2 to do it. Like many of the divisions, the other three spread the requirement out among the entire staff.

A trend develops when the requirement to predict is matched up with the decision making processes used. Most often when a unit used CDMP, prediction was not necessary. Usually, units that performed DDMP required prediction. As

time gets short, the predictive requirement fades in importance. Whether it fades as a result of importance or purely because it takes too much time could not be determined in the interviews.

In gross terms, divisions operate in a time constrained environment more than do corps. The interviews demonstrated that divisions prefer the CDMP and corps prefer the DDMP. The CDMP is a better process in a time constrained environment. If the basis for a good CDMP is a thorough DDMP (FM 101-5, 1993) this preference by unit is complimentary. Corps provide the DDMP for divisions to perform CDMP. In this case the prediction that corps does can aid its divisions.

When divisions operate in the absence of a corps or when time is too short for corps to conduct the DDMP, formal prediction gives way to intuition or recognitional decision making. Every officer interviewed confirmed that recognitional decision making ability was essential in the wargaming process. Only through wargaming would enemy intentions begin to come out. Most of this wargaming was a mental intuitive process. Wargaming is conducted formally or informally in three of four decision making steps (question 10, Appendix C).

Recognitional decision making ability lays the groundwork to break from the formal DDMP process.[81] Most officers believe they developed their recognitional decision making ability after they arrived in units. The

remainder felt they developed what they possess from experience in former units, exercises and simulations against a thinking enemy, and in school. Officers responded that recognitional decision making ability was critical when time was short.

During two exercises, Prairie Warrior 94 and Fuerzas Unidas 94, French and Chilean officers demonstrated their own method of using recognitional decision making. Neither predicted enemy intentions during mission analysis or any other phase of their decision making process.[82] They focused on enemy capabilities. They both used every member of their staff to determine those enemy capabilities and patterns of action. It was **not** the sole realm of the G-2 as it is in some US units. They each felt that one person did not possess any greater expertise to recognize enemy patterns and capabilities than the sum of the entire staff. Ironically, both country's officers followed a facsimile of the CDMP and not the DDMP.

Some US staffs recognize the utility of having more expertise available when attempting to determine enemy capabilities and realize that a G-2 cannot predict better than the whole staff. The XVIII Abn Corps now collocates all planners together to facilitate the integration of more recognitional ability to predict enemy intentions. The 2d and 4th Infantry Divisions have physically collocated their G-2 and G-3 planners as well. Other units are considering similar measures.

Prediction and the DDMP take valuable time. Recognitional decision making is critical in the wargaming process and in a time constrained environment. It is the tool for mentally predicting enemy intentions, however flexible enough so that plans don't become based strictly on it. The DDMP would have plans based on prediction.

A trend is developing where the G-2 is no longer responsible for prediction alone if at all. The reason for this involves recognitional expertise, who has it, and where it is learned. Building and using recognitional decision making in the CDMP provides for a flexibility of thought that the DDMP does not necessarily provide for. It takes a great deal of practice. To develop this ability within its staff, one unit (1st Infantry Division) dedicates fully 25% of its staff training time in "Cold Reason" exercises toward pattern recognition and numerous iterations of the CDMP.[83] Other units conduct similar training. The BCTP rotations provide the focus for this training.

SECTION IV

CONCLUSIONS

The purpose of this monograph was to determine if the US Army's wargaming and decision making process is correct in its consideration of enemy COAs. It is flawed in that it places too much emphasis on process rather than outcome. The decision making processes the army uses are based on the DDMP. The DDMP is an analytical process that has at its

roots a 300 year old tool that is sequential by nature. The army requires intelligence planners to predict enemy COAs (intentions) before operations planners develop friendly COAs.

In a world that produces newer technologies daily that speed the pace of warfare, the DDMP has not kept up. It is too slow and if followed to the letter, is unreliable due to its sequentiality. The DDMP forces a staff to undertake numerous iterations of it to solve the "Catch-22" problem (the endless do-loop of which comes first: the enemy COA or the friendly COA). The product can often lead to a plan being based on a predicted enemy COA at the expense of flexibility with which to accommodate all an enemy's capabilities. This method can potentially work in the early stages of conflict, but becomes suspect if the enemy is allowed time to adapt.

In its place the CDMP allows for time constrained decision making. It is a combination of both analytical and recognitional decision making. The CDMP takes advantage of parallel planning based on an officer's ability to recognize patterns of enemy action and enemy capability. Units use or prefer to use the CDMP when time is critical. Divisions use it more than corps for this reason.

With sufficient recognitional decision making ability within the staff, the CDMP can be undertaken without the benefit of a prior DDMP. In this case the predictive

requirement is not necessary. Divisions that primarily used CDMP did not predict enemy COAs. Recognitional decision making keeps an enemy's intentions just within the edge of awareness.

The commander usually possess the highest level of recognitional decision making ability based on talent, expertise and experience. To reach or exceed this level, the staff must combine its talent. Some units currently collocate their planners to take more advantage of their collective talent, expertise and experience (XVIII Corps, 2 and 4 ID among others). In doing so they allow more simultaneity in the CDMP. Like Chile, France and other nations, combining a staffs talent when determining enemy capability yields a more timely accurate estimate on which to base a plan.

Three recommendations to streamline the CDMP further include: combining the intelligence and operations sections, changing the name IPB to Staff Preparation of the Battlefield (and commensurate training to incorporate increased staff input into determining enemy capability beyond merely the G-2), and an increased emphasis in schools to advance recognitional decision making ability. The last recommendation can be facilitated through additional simulations against a thinking responsive enemy. Having two staffs plan to fight each other and then doing so in simulation is another way to progress recognitional decision making. The last method would go far in displaying

doctrinal weakness and fostering innovation especially in a free play environment.

A recommendation for further study concerns determining if the product of DDMP and CDMP is of different quality. There is nothing definitive to prove this yet. To determine this an experiment could be conducted using TCDC over the period of a week. One group could follow the traditional DDMP and fight the battle out on the fifth day (as is currently done in SAMS). Another could fight five battles in the same period going through the CDMP prior to each battle (Similar to what is now done in the Pre Command Course). The results could be compared from the first and fifth CDMP battle and the single DDMP battle. Discussions with both staffs could ascertain how much recognitional expertise accrued to each staff over the period as well. Of note would be to determine if there is any correlation of a preference toward deception and suboptimal friendly COAs to either particular decision making process used.

Appendix A
Units/Personnel Interviewed

Unit	Personnel Interviewed	Staff Section
1st ID	MAJ Steve Eldridge	G-2 (Planner)
	MAJ Steve Lanza	G-3 (Plex)
	MAJ Al Mosher	G-3 (Tactical Plans)
1st Cav Div	MAJ Sharon Fontenoa	Deputy G-2
	MAJ John Scudder	G-3 (Plans)
2nd ID	MAJ Bob Johnson	Deputy G-3
	MAJ Doug Morrison	G-3 (Plex)
3rd ID	MAJ Steve Peterson	G-2 (Plans)
	MAJ Sean MacFarland	G-3 (Plans)
4th ID	CPT Mark Ernst	G-2 (Plans)
	MAJ Russ Santala	G-3 (Plans)
24th ID	MAJ Tony Massinon	Deputy G-2
	MAJ Rucker Snead	G-3 (Plex)
25th ID	MAJ Mort Orlov	G-3 (Plans)
10th Mtn Div	MAJ Grant Stefan	G-3 (Plans)
	MAJ Drew Early	Deputy G-4
82nd Abn Div	CPT James Smith	G-2 (Plans)
	MAJ Todd Ebel	G-3 (Plans)
	MAJ Mike Simmons	G-3 (Plans)
101st AAslt	MAJ Jon Hunter	G-2 (Plans)
	MAJ Kevin Donahue	G-3 (Plans)
2 ACR	MAJ Brian Foy	G-4
I Corps	MAJ Clint Esarey	G-3 (Plans)
	MAJ Mike Boatner	G-3 (Plans)
III Corps	CPT George Samovar	G-2 (Plans)
	MAJ John Friedson	G-3 (Plans)
V Corps	MAJ Frank Abbott	G-2 (Plans)
	MAJ Peter Schifferle	G-3 (Plans)
XVIII Abn Corps	MAJ Brian Layer	G-3 (Plans)
	MAJ Mike Flynn	G-3 (Plans)

Appendix B
Interview Questions

1) What decision making process is your staff required to use? (Interviewees are asked to explain their process)

2) Is anyone in your staff required to predict the enemy's most likely and/or most dangerous COA? Who?

3) Where in your decision making process does your staff make that (most likely/most dangerous) prediction?

4) Is sufficient information available to predict enemy intentions with which to base a plan?

5) Are BLUEFOR dispositions available from which to predict enemy intentions?

6) Is identifying only enemy capabilities quicker than determining enemy intentions?

7) Does the staff come together often during the IPB process? (Interviewees explain how they conduct IPB)

8) Where do enemy intentions become most clear in your decision making process?

9) Where in the DMP do you conduct the FAS (feasibility, acceptability, suitability) test?

10) Where in your DMP do you conduct your wargaming?

11) Is enemy intention prediction altered as a result of the wargaming process?

12) Is recognitional decision making necessary for wargaming?

13) Where did you learn recognitional decision making? (Schools, OJT, Other, All)

14) How much of your decision making process is time constrained? (0, 10, 25, 50, 75, 90, 100%)

15) Does your staff primarily conduct the deliberate decision making process or the combat decision making process?

16) Which process do you believe is most efficient in a time constrained environment?

17) Is prediction more or less necessary in a time constrained environment?

Appendix C
Answers Received by Unit

UNIT	STF SEC	QUESTIONS 1	2	3	4	5	6	7	8	9	10
1ID	2	DDMP	Y-2	MA	N	N	Y	Y	WG	MA	MA,CD,CA
	3	CDMP	Y-ALL	COA-D	Y	N	Y	Y	WG	COA-D	CD,CA
1CD	2	DDMP	Y-2,3	COA-D	Y	Y	Y	N	Reh	COA-D	CA
	3	DDMP	Y-2,3	COA-D	Y	Y	Y	Y	WG	MA	CD,CA
2ID	*2										
	3	CDMP	N	--	-	-	Y	Y	COA-D	COA-D	CA
3ID	2	DDMP	Y-2	MA	N	N	Y	N	Reh	WG	CD,CA
	3	DDMP	Y-2	MA	Y	Y	Y	Y	COA-D	COA-D	CD,CA
4ID	2	DDMP	Y-CDR	COA-D	Y	Y	N	N	DB	COA-D	CD,CA
	3	CDMP	N	CDR	Y	Y	N	N	WG	COA-D	CA
24ID	2	DDMP	Y-2	MA	N	N	Y	Y	COA-D	WG	MA,CA
	3	DDMP	Y-2	COA-D	Y	Y	Y	Y	WG	COA-D	CD,CA
25ID	*2										
	3	CDMP	N	--	-	-	Y	Y	WG	COA-D	CD,CA
10MTN	2	DDMP	Y-ALL	MA	N	N	Y	N	WG	COA-D	MA,CD,CA
	3	DDMP	Y-ALL	MA/COA-D,WG	Y	Y	Y	N	COA-D	COA-D	MA,CD,CA
82ABN	2	DDMP	Y-2,3	MA,COA-D	N	Y	Y	Y	WG	WG	MA,CA
	3	CDMP	Y-2	COA-D,WG	Y	Y	Y	Y	COA-D	COA-D	CA
101AA	2	DDMP	Y,2	MA	N	N	Y	Y	WG	WG	CA
	3	DDMP	Y,2,3	MA	Y	N	Y	Y	COA-D	COA-D	CA
1AD	2	DDMP	N	--	-	-	Y	Y	WG	COA-D	CA
	3	DDMP	N	--	-	-	Y	Y	WG	COA-D	CA
2AD	*2										
	3	CDMP	N	--	-	-	Y	Y	WG	COA-D	CA
I CORPS	*2										
	3	DDMP	Y-3,2	MA,COA-D	Y	Y	Y	Y	COA-D	COA-D	CA
III CORPS	2	DDMP	Y-ALL	MA	N	N	Y	Y	WG	COA-D	MA,CD,CA
	3	DDMP	Y-ALL	MA	Y	N	Y	Y	COA-D	COA-D	CD,CA
V CORPS	2	DDMP	Y-2	COA-D	Y	Y	Y	N	WG	COA-D	MA,CD
	3	DDMP	Y-2	MA,COA-D	Y	Y	Y	N	WG	COA-D	CD,CA
XVIII CORPS	*2										
	3	DDMP	Y-ALL	MA,COA-D	Y	Y	Y	Y	WG	COA-D	CD,CA

Appendix C
Answers Received by Unit

UNIT	STF SEC	QUESTIONS 11	12	13	14	15	16	17
1ID	2	Y	Y	ALL	75	CDMP	CDMP	LESS
	3	Y	Y	SCH,OJT	90	CDMP	CDMP	LESS
1CD	2	Y	Y	SCH	90	DDMP	CDMP	LESS
	3	Y	Y	ALL	100	CDMP	CDMP	LESS
2ID	*2							
	3	N	Y	OJT	90	CDMP	CDMP	LESS
3ID	2	Y	Y	OJT	100	DDMP	CDMP	MORE
	3	Y	Y	ALL	90	CDMP	CDMP	LESS
4ID	2	Y	Y	OJT	75	CDMP	CDMP	LESS
	3	Y	Y	ALL	90	CDMP	CDMP	LESS
24ID	2	Y	Y	OJT	90	CDMP	CDMP	LESS
	3	Y	Y	OJT	90	CDMP	CDMP	LESS
25ID	*2							
	3	N	Y	ALL	90	CDMP	CDMP	LESS
10MTN	2	Y	Y	OJT	75	DDMP	DDMP	MORE
	3	N	Y	ALL	75	CDMP	CDMP	LESS
82ABN	2	Y	Y	OJT	75	CDMP	CDMP	MORE
	3	N	Y	ALL	90	CDMP	CDMP	LESS
101AA	2	Y	Y	ALL	90	DDMP	DDMP	MORE
	3	Y	Y	ALL	100	CDMP	CDMP	LESS
1AD	2	-	Y	OJT,SCH	90	CDMP	CDMP	LESS
	3	-	Y	ALL	90	CDMP	CDMP	LESS
2AD	*2							
	3	-	Y	ALL	75	CDMP	CDMP	LESS
I CORPS	*2 3	Y	Y	OJT	50	DDMP	CDMP	MORE
III CORPS	2 3	Y Y	Y Y	OJT OJT	50 75	DDMP CDMP	CDMP CDMP	MORE MORE
V CORPS	2 3	Y Y	Y Y	SCH,OJT ALL	50 50	DDMP DDMP	CDMP CDMP	MORE LESS
XVIII CORPS	*2 3	Y	Y	ALL	90	CDMP	CDMP	MORE

Appendix C
Answer Explanations

Question #

1, 15 & 16) DDMP = deliberate decision making process
CDMP = combat decision making process

2) Y = yes; 2 = Intel section, 3 = Ops section, All = input from all staff sections affects prediction, CDR = commander
N = no

3) MA = mission analysis
COA-D = course of action development
WG = wargaming in course of action analysis
CDR = commanders estimate

4-7, 11 & 12) Y = yes
N = no

8-9) WG = wargaming in course of action analysis
Reh = rehearsal
COA-D = course of action development

10) MA = mission analysis
CD = course of action development
CA = course of action analysis

13) SCH = Schools (CAS3, CGSC, SAMS and Branch Schools)
OJT = Training conducted by units
OTHER = Training received outside the army or talent that previously existed
ALL = Combination of all the above

14) # indicated is an estimate of the percentage of time consumed conducting time constrained decision making.

17) MORE = enemy COA prediction is increasingly necessary as time gets short both as a tool for their staff and as a product for subordinate units.
LESS = enemy COA prediction is decreasingly necessary as time gets short both as a tool for their staff and as a product for subordinate units.

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3. COL Mark P. Hamilton, "IPB or IPC?" Military Intelligence Magazine, Vol. 16, No. 2 (April - June 1990), P. 24.

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6. US ARMY, FM 101-5, Command and Control for Commanders and Staff, Final Draft, Washington, DC,: HQDA, USGPO, 1993, pp. 4-4 to 4-26.

7. US ARMY, FM 34-130, Intelligence Preparation of the Battlefield, Washington, DC: HQDA, USGPO, 8 July 1994, pp. 1-6, 2-44, 2-53 to 2-54.

8. US ARMY, FM 101-5, pp. 4-4 to 4-25.

9. Personal experience of the author while attending both the Command and General Staff College 1993-4 and the School of Advanced Military Studies, 1994-5, Fort Leavenworth, KS. Lessons where the deliberate decision-making process collapsed into the combat decision-making process occurred in C310 (CGSC, Tactics), C320 (CGSC, Advanced Tactics), A301, (FA54 required Tactics classes), Bde movement exercise, Corps Kosovo Exercise and Transcaucus Exercise (SAMS, course 2).

10. Discussion with COL Gregory Fontenot during SAMS class on 3 February 1995. At this class, he discussed his most recent TCDC exercise week from the Pre Command Course. He stated that the commanders would fight up to two computer battle simulations per day. Time was intentionally short which fostered training recognitional decision-making. He further stated that repetition was the best way to teach recognitional decision-making. COL Fontenot firmly believed a person requires a basis of understanding of the deliberate decision-making process to fully exploit the benefits of the recognitional method. He also felt that the School of Advanced Military Science (of which he is the director) would benefit from more exercises but, that other commitments consumed time that did not allow more to be placed on the schedule.

11. Ibid.

12. MG House, Commanding General, 1St Infantry Division, Presentation on the 1st Infantry Division and what he requires from SAMS graduates. Two items he felt were essential in a planner were that they possessed the capability to find information quickly through automation and computer literacy and that they were able to think quickly. He stated that most planning was time constrained and that they rarely went through the entire deliberate decision-making process. Many times he stated that delivering a single well thought out friendly COA that was flexible enough to accommodate a wide variety of enemy COAs was best because it was to hard to predict in the time available. Throughout his presentation, the criticality for flexibility of both thought and operations was fully apparent.

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32. Miller, pp. 8-9.

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34. FM 34-130, p. 1-6. and FM 101-5, pp. 4-26 to 4-27.

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76. Author's personal experience as a student at CGSC AY93-94.

77. Richard L. Cavassos, GEN (Ret), Comments made while serving as the senior observer to Operations Group B of the Battle Command Training Program on 16 March 1995.

78. _____Beldon, COL, Comments made during the BCTP rotation on 17 March 1995 during a seminar on reconnaissance. The implication was that the G-2 is often left by himself in determining enemy intentions when he does not control all the assets available to determine those intentions. This seminar focused on those assets available for reconnaissance. It also applies to more than purely reconnaissance assets though.

79. _____Ernst, MG, Comments expressed on predicting enemy COAs and intentions during the 1995 SAMS Bctp rotation on 17 March 1995.

80. The following interviews were conducted with officers who were currently filling intelligence or operations planner positions. Interviews were conducted on the dates indicated. Appendix A lists the job positions each officer held at the time of questioning. Appendix B contains the questions asked and C is an abbreviated list of answers to those 17 questions. Appendix C also includes a legend to assist in deciphering the listed answers.

MAJ Steve Eldridge	27 March 1995
MAJ Steve Lanza	29 March 1995
MAJ Al Mosher	3 March 1995
MAJ Sharon Fontenoa	27 March 1995
MAJ John Scudder	29 March 1995
MAJ Bob Johnson	10 February 1995
MAJ Doug Morrison	30 March 1995
MAJ Steve Peterson	21 February 1995
MAJ Sean MacFarland	23 February 1995
CPT Mark Ernst	23 February 1995
MAJ Russ Santala	3 March 1995
MAJ Tony Massinon	3 April 1995
MAJ Rucker Snead	20 February 1995
MAJ Mort Orlov	22 February 1995
MAJ Grant Stefan	22 February 1995
MAJ Drew Early	24 February 1995
CPT James Smith	3 March 1995
MAJ Todd Ebel	27 March 1995
MAJ Mike Simmons	20 February 1995
MAJ Jon Hunter	21 February 1995
MAJ Kevin Donahue	29 March 1995
MAJ Brian Foy	3 March 1995
MAJ Clint Esarey	24 February 1995
MAJ Mike Boatner	20 February 1995
CPT George Samovar	23 February 1995
MAJ John Friedson	17 February 1995
MAJ Frank Abbott	17 February 1995
MAJ Peter Schifferle	20 February 1995
MAJ Brian Layer	21 February 1995
MAJ Mike Flynn	3 March 1995

81. Fontenot interview.

82. Authors experience while participating in Prairie Warrior 1994 with the French Army at Fort Leavenworth, Kansas and in Fuerzas Unidas 1994 with officers from the Chilean Academie de Guerre from Santiago, Chile.

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